Chicken Genetic Resources and Sustainable Rural Livelihoods in Nigeria

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Local Chicken Genetic Resources in Nigeria

Collections from different locations include:

- "Ibadan" (Hill 1954, Hill and Modebe, 1961)
- "Ife" (Akinokun, 1974; Akinokun and Dettmers, 1979)
- "Nsukka", (Nwosu et al, 1985)
- "Owerri" and "Awgu" (Eshiett et al, 1989)
- "Fulani" - referring to the tribe (Atteh, 1990; Sonaiya and Olori, 1992; Olori, 1992)
- "Ogun" (Adebambo et al., 1999).

Classification of Nigerian Local Chicken collections 1

Class	Representation in population	Observations and remarks
Body size		
Dwarf	Rare	Small body size (mean height at saddle <18 cm); short shank length <6cm, early sexual maturity (4 months) and highly broody.
Normal size	Normal	Mean height at saddle = 20cm and 23 cm shank length = 7 cm and 9 cm for female and male, respectively.
Fulani	Normal (Most owned by Fulani herdsmen)	Height at saddle = 22 and 24 cm and shank length = 10 and 13 cm, for female and male, respectively

Classification of Nigerian Local Chicken collections 2

Class	Representation in population	Observations and remarks
Feather Characteristics		
Frizzled	Threatened	Feathers upturned or outward curling. Birds are very nervous, broody and flighty. Normal body size
Short flight	Rare	Little or no flight feathers. The sickle, tail and wing feathers are lacking.
Smooth	Normal	Feathers are held close to the body.
Feather colour		
White	Normal	Because of its solid white colour, used for sacrifices
Black	Normal	Used for sacrifices
Mottled	Normal	Combinations of white, red and black
Barred	Rare	Black or brown interlaced with white
Feather position		
Naked neck	Threatened	Neck, head and breast devoid of feathers. Due to unattractiveness, usually culled.
Feathered shanks	Rare	Legs covered with feathers to varying degrees
Crested	Normal	Fluff feathers on top of the head.

Weights and Measures of Local Chicken collections

Body weight (g)				Shank length (cm)		
Age (weeks)	20	40	72	20	40	72
Total	992	1130	1161	8.4	8.5	10.9
Male	1102	1310	1439	9.2	9.3	12.7
Female	905	998	1138	7.7	7.9	10.7
Kaduna	1114	1144	1240	8.0	8.2	11.1
Ilorin	1042	1060	1208	7.6	7.9	11.1
Makurdi	1142	1206	1230	8.1	8.3	10.9
Jos	1139	1174	1280	8.3	8.3	10.9
Sagamu	1008	1018	1246	7.7	8.0	11.0
Nsukka	1051	1187	1050	8.0	8.3	10.3

Egg production, immunity and heterozygosity of local chicken collections

Population	Mean AFE (d)	Egg weight (g)	Egg Number	Immunity	Mean heterozygosity
Kaduna	153	41	94	0.5	.59
Ilorin	150	38	80	1.0	.50
Makurdi	166	41	101	-2.0	.57
Jos	169	36	97	1.0	.60
Sagamu	167	40	84	0.01	.57
Nsukka	162	38	104	-0.5	.59
Dahlem Red	159	58	143	-2.0	.49
Shika Brown	138	49	182	Not Tested	Not Tested
Funaab Alpha	1277g (WFE)	46	65 (%HH)	Not Tested	Not Tested

Laying performance of Nigerian Local Chickens from three ecozones

Month in lay	Derived Savanna		Guinea Savanna		Rain Forest	
	Egg production (% hens/day)	Egg weight (g)	Egg production (% hens/day)	Egg weight (g)	Egg production (% hens/day)	Egg weight (g)
2	65	35.5	70	33.6	60	32.1
3	65	36.9	75	34.5	65	35.2
4	40	37.1	55	34.6	50	35.3
7	40	38.7	55	39.1	50	37.5
8	45	39.2	45	39.0	45	37.5
9	45	39.9	45	39.9	35	38.9
10	40	39.8	35	40.3	30	38.9
11	25	42.9	30	38.7	20	38.4
12	25	40.9	20	39.8	30	37.6
13	30	41.9	30	40.4	25	40.9
Age at first lay	157		160		165	

Laying performance of Nigeria Local Chicken X Dahlem Red crosses

Month in lay	Fu×DR	DR×Fu	DR×Y	FuD×DRD
	Mean	Mean	Mean	Mean
280-day mean egg production (% HD)	60	75	60	45
Age at first egg (days)	151	160	161	161
Body weight at first egg (g)	1229	1323	1200	750

Smallholder Chicken Production

A few chickens can be a step towards food security and poverty eradication in the rural areas. The process technology is simple and well known as the "smallholder chicken model" developed in Bangladesh which has been adapted in many countries such as Malawi, Mozambique, Zimbabwe, Tanzania, Ethiopia, Benin, Senegal, Burkina Faso and Nigeria

SFC Context and Potential

SFC producers are:

resource poor (including in land),

usually women

live in rural areas

IFAD projects in Africa and Asia showed SFC:

Generates income for poor women in the rural areas

Every year, one single hen can supply:

5 adult culls (8 kg meat),

7 pullets and 7 cockerels (12 kg meat)

30 table eggs (1.0 kg eggs)

SFC and Family Nutrition

SFC in Bangladesh helped the poor to increase:

- **consumption of eggs and chicken meat**
- **sale of eggs**
- **purchase of fish, cattle and goat meat and milk**

This is significant for young children, pregnant and nursing women who are provided increased supply of essential amino acids through the diversity of animal foods now available to them.

Nigeria and Poverty Reduction

- At the World Summit for Social Development in 1995, Nigeria committed herself to implement a national anti-poverty plan = National Poverty Eradication Programme (NAPEP).
- In 2001, Nigeria paid in advance the total cost for the FAO's Special Programme for Food Security (SPFS).
- A constraint analysis was conducted in 12 villages in Kano State under the FAO project TCP/NIR/4555 "Action Programme for food-based interventions and training to improve household food security and nutrition in Kano State".
- The SPFS was launched in January 2002.

Innovations and Development relevant to SFC in Nigeria

By Federal MDAs

1. Excellent vaccines for chickens at NVRI, Vom
2. Objective of national vaccination of LC by FDL&PCS
3. Poultry Transformation Plan in the Agricultural Transformation Agenda (ATA, 2011-2015) of the FMARD especially the Poultry Growth Enhancement Scheme (GES) which was first rolled out in Kaduna State in 2013.

By Universities

1. Presidential Task Forces on Alternative Livestock Feeds and development of star diets
2. Development and release of the Shika Brown Layer by the National Animal Production Research Institute at ABU
3. On-going development of the FUNAAB alpha at the Federal University of Agriculture, Abeokuta

Conclusion

The local chicken genetic resources, even without improvement, have provided valuable high-protein products and income for rural families.

The evaluation of local chickens provides evidence that the introduction of **tropically adapted improved germplasm** is capable of increasing productivity in SFC systems of the rural poor in Nigeria.